

Patent Claims

1. A method for fabricating a contact hole for a semiconductor memory component, in particular a DRAM or an FRAM, having a silicon substrate, an intermediate dielectric layer (1) arranged on said substrate, an upper layer (3) made of a ferroelectric material or made of a material having a high dielectric constant being arranged on said intermediate dielectric layer, having the steps of:

Forming a perforated mask on the upper layer (3), a material which exhibits temperature stability during a later deposition process being used for the perforated mask;

Etching the upper layer (3) and a depression (8') into the intermediate dielectric layer (1) as far as a residual thickness (d₀) using the perforated mask;

Depositing a layer made of O₃/TEOS-SiO₂ onto the structure thus obtained including the perforated mask in the later deposition process;

Removing the layer made of O₃/TEOS-SiO₂ from the bottom of the depression (8') by etching; and

Thereupon lowering the depression (8') by etching in order to produce the contact hole as far as the interface with the silicon substrate, the latter being uncovered, the layer made of O₃/TEOS-SiO₂ serving as a lateral seal of the upper layer (3) during the etching process.

2. The method as claimed in claim 1, wherein polyimide is used as the material for the perforated mask.

3. The method as claimed in claim 1, wherein photoimide is used as the material for the perforated mask.

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4. The method as claimed in claim 1, 2 or 3, wherein, after the uncovering of the silicon substrate in the region of the bottom of the contact hole, the latter being spared, a layer made of $O_3/TEOS-SiO_2$ is again deposited onto this structure.

5. The method as claimed in claim 4, wherein the perforated mask material is stripped prior to renewed deposition of $O_3/TEOS-SiO_2$.

6. The method as claimed in one of the preceding claims, wherein a layer made of a ferroelectric material, in particular SBT or PZT, or made of a material having a high dielectric constant, in particular BST, is used as the upper layer (3).

sub
A1
contd

add
A2